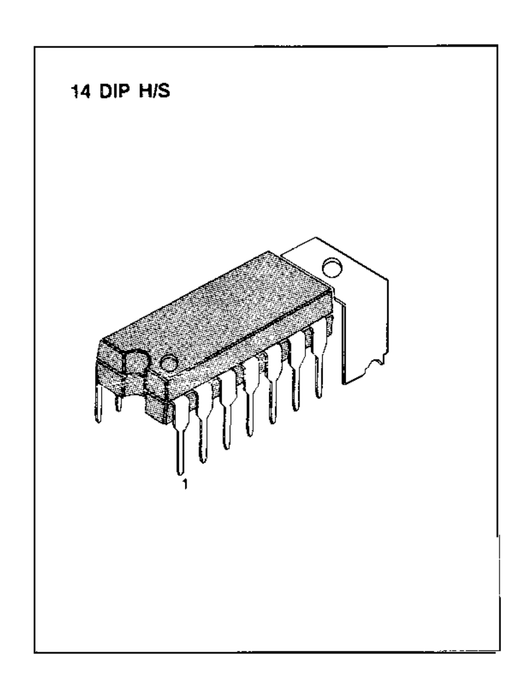
TV SOUND SYSTEM

The KA2102A is a silicon monolithic integrated circuit designed for the SIF and audio section in television receivers. This IC has all functions including sound IF amplifier, FM detector, DC volume control circuit, audio output amplifier with 2.4 Watts output power and voltage regulator. This IC is encapsulated-in a 14-pin dual in-line package with heat tab.



FEATURES

- Wide power supply range, 9V ~ 18V
  2.4 Watt, at V_{CC} = 18V, R_L = 8Ω (For 17" TV)
  1.2 Watt, at V_{CC} = 12V, R_L = 8Ω (For 12" TV)
- Linear volume control
- Low harmonic distortion
- Differential peak detector
- Enough attenuation (Typ, 80dB) by squelch circuit

ORDERING INFORMATION

Device	Package	Operating Temperature
KA2102A	14 DIP H/S	− 20 ~ + 75°C

TYPICAL APPLICATION CIRCUIT

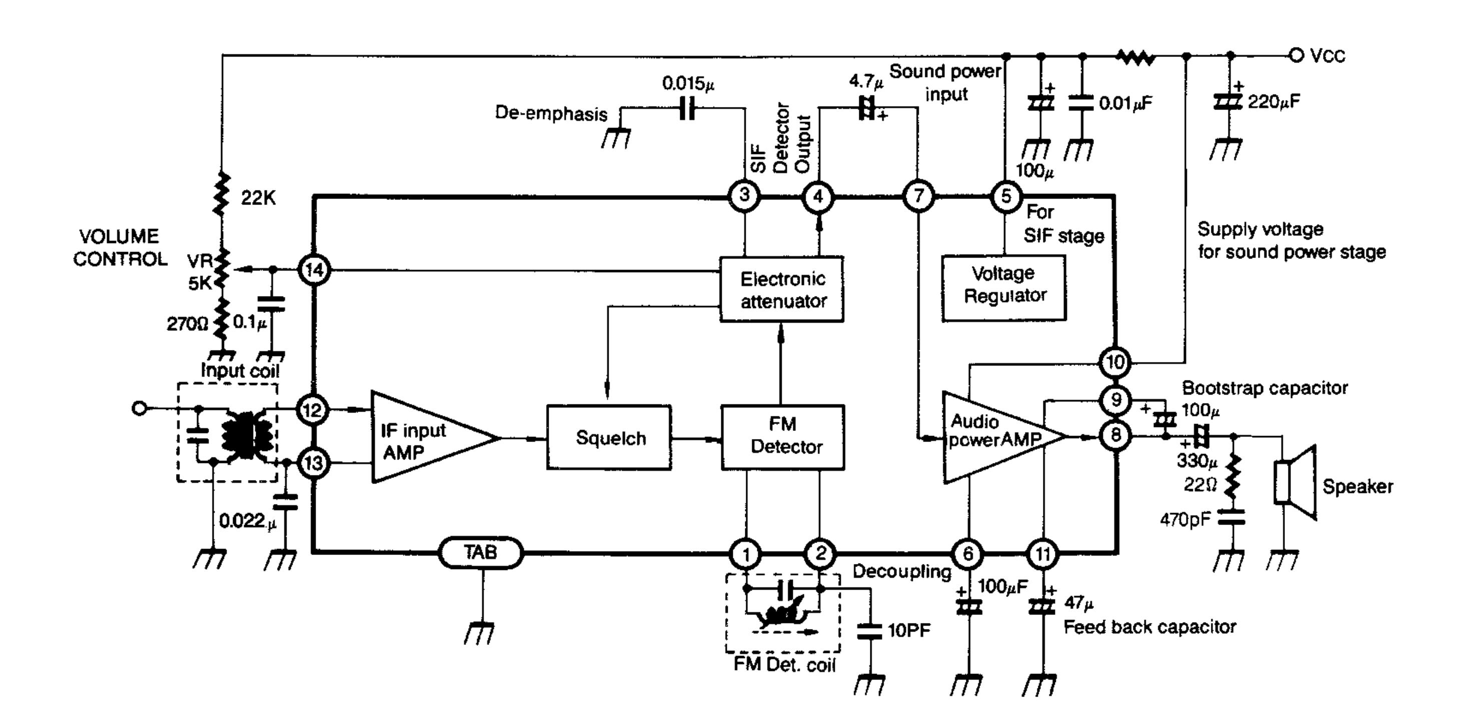


Fig. 1

ABSOLUTE MAXIMUM RATINGS (T_a=25°C)

Characteristic	Symbol	Value	Unit
Supply Voltage (Pin 10)	V_{10}	20	V
Supply Current (Pin 10)	I_{10}	1	A
Supply Current (Pin 5)	I_5	100	mA
Input Signal Voltage	V_I	3	V_{p-p}
Power Dissipation	P_{D1}	0.8 (T_a=75°C) free air	W
Power Dissipation	P_{D2}	1.4*	W
Operating Temperature	T_{OPR}	−20 ~ +75	°C
Storage Temperature	T_{STG}	−40 ~ +150	°C

* Printed Circuit Copper Area 50×50mm²

ELECTRICAL CHARACTERISTICS (T_a=25°C)

1. IF STAGE (V_{CC}=12V, R_B=100Ω, V_{14}≧1.3V, fo=4.5MHz, fm=400Hz, f= ±25KHz, R_g=50μΩ)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Pin 5 Voltage	V_{5A}		7.5	8.0	8.5	V
Pin 5 Voltage	V_{5B}	V_{CC}=18V, R_B=330Ω	7.5	8.0	8.5	V
Pin 10 Current	I_{10A}	No Input Signal	14	19	24	mA
Pin 10 Current	I_{10B}	V_{CC}=18V, R_B=330Ω No Input Signal	16	28	35	mA
IF Limiting Voltage	V_{LIM}	V_{OAF} (V_i=10mVrms). −3dB	—	200	400	μVrms
Detector Output Voltage	V_{OAF}	V_i=10mVrms	300	360	—	mVrms
Detector Distortion	THD_1	V_i=10mVrms	—	0.7	—	%
AM Rejection	AMR	AM Mod 30% fm=400Hz V_i=10mVrms	−40	−50	—	dB
Maximum Attenuation	V_{ATT}	V_{14}=0V	−60	−80	—	dB

2. SOUND POWER STAGE (V_{CC}=12V, R_B=100Ω, R_L=8Ω, f=400Hz, R_G=600Ω)

Characteristic	Symbol	Test Conditions	Min	Typ	Max	Unit
Sound Stage Voltage Gain	G_{VAF}	V_i=30mVrms	33	37	41	dB
Sound Output Power	P_{OA}	THD=10%	0.9	1.2	—	W
Sound Output Power	P_{OB}	V_{CC}=18V, R_B=330Ω THD=10%	2.0	2.4	—	W
Sound Output Distortion	THD_{2A}	Po=0.5W	—	0.6	2.0	%
Sound Output Distortion	THD_{2B}	V_{CC}=18V, R_B=330Ω P_o=0.5W	—	0.5	2.0	%
Overall Sound Output Distortion (IF + Sound Power Stage)	THD_3	P_o=0.5W V_i=10mVrms	—	1.5	4.0	%

3. TYPICAL DATA

Characteristic	Symbol	Test Conditions	Value	Unit
Pin 10 Current	I_{10}	$THD_{2A}=10\%$	200-210	mA
Pin 10 Current	I_{10}	$THD_{2B}=10\%$	270-280	mA
Sound Output Power	P_{OA}	THD=3%	1.1	W
Sound Output Power	P_{OB}	$V_{CC}=18V$, $R_B=330\Omega$ THD=3%	2.0	W
Sound Stage Band Width	fs	−3dB	50~50K	Hz

TEST CIRCUIT

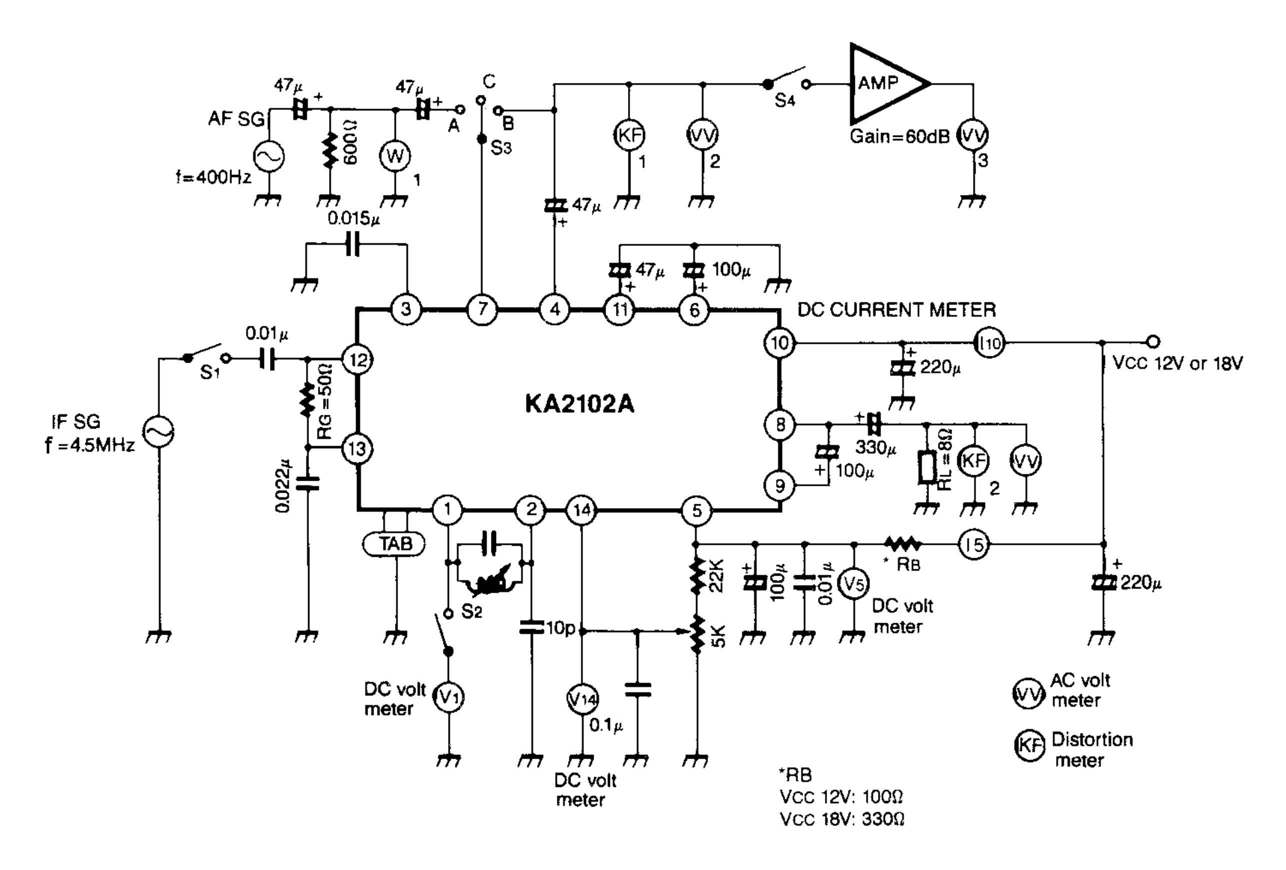
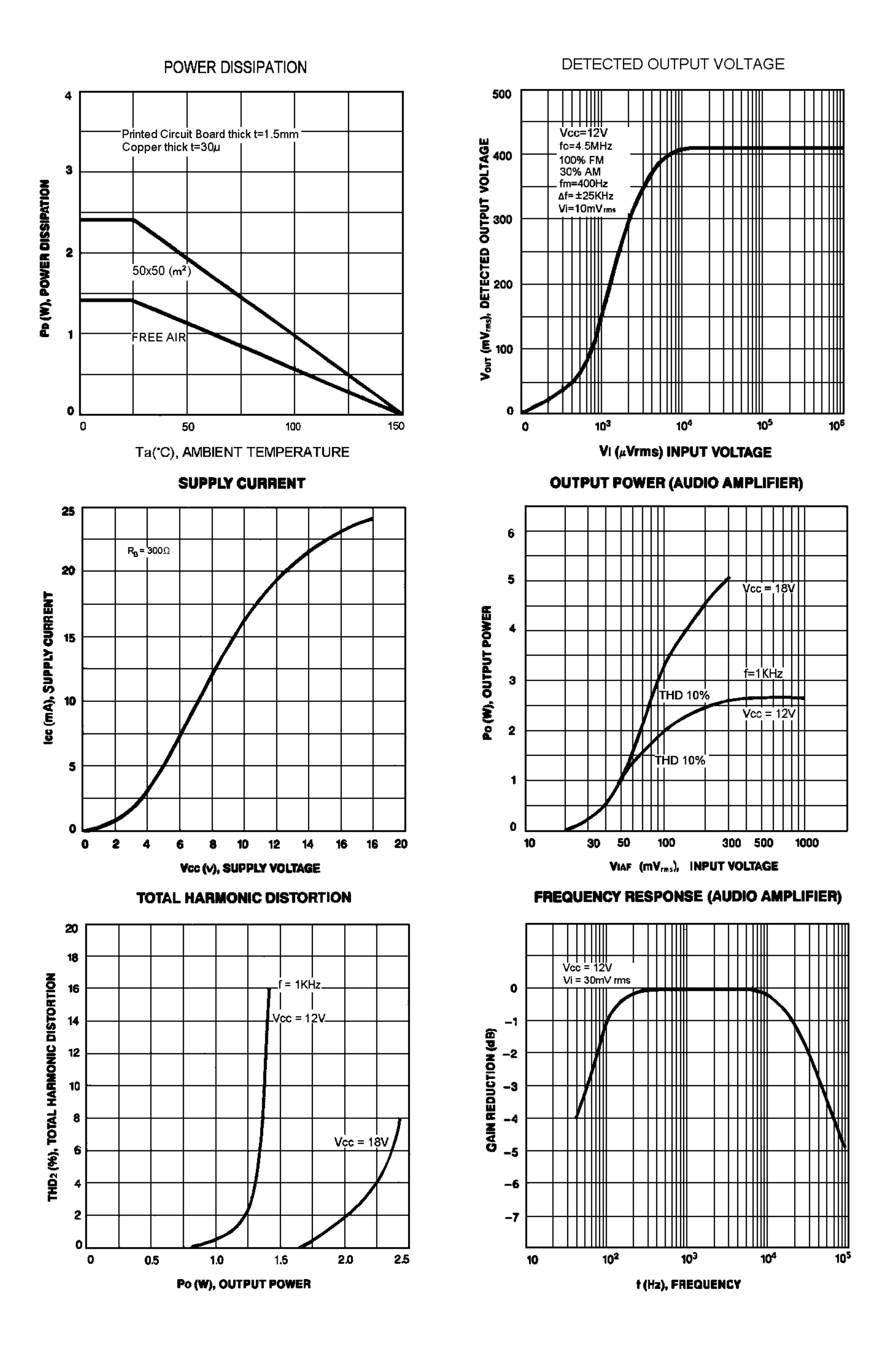


Fig. 2


POWER DISSIPATION
Printed Circuit Board thick t=1.5mm
Copper thick t=30μ
50x50 (m²)
FREE AIR
PD (W), POWER DISSIPATION
Ta(°C), AMBIENT TEMPERATURE
DETECTED OUTPUT VOLTAGE
Vcc=12V
fo=4.5MHz
100% FM
30% AM
fm=400Hz
Δf=±25KHz
Vi=10mVrms
VOUT (mVrms), DETECTED OUTPUT VOLTAGE
Vi (μVrms) INPUT VOLTAGE
SUPPLY CURRENT
RB = 300Ω
Icc (mA), SUPPLY CURRENT
Vcc (v), SUPPLY VOLTAGE
OUTPUT POWER (AUDIO AMPLIFIER)
Vcc = 18V
f=1KHz
THD 10%
Vcc = 12V
THD 10%
Po (W), OUTPUT POWER
VIAF (mVrms), INPUT VOLTAGE
TOTAL HARMONIC DISTORTION
f = 1KHz
Vcc = 12V
Vcc = 18V
THD2 (%), TOTAL HARMONIC DISTORTION
Po (W), OUTPUT POWER
FREQUENCY RESPONSE (AUDIO AMPLIFIER)
Vcc = 12V
Vi = 30mV rms
GAIN REDUCTION (dB)
f (Hz), FREQUENCY